

What is claimed is:

1. An apparatus for partially transmitting image data on a network, comprising:

5        a first storage means for storing partial-region-accessible image file;

a second storage means for storing information, which is offset & partial region access information, needed to generate partial region image;

10      a first communication processing means for receiving request for partial region image from a client and transmitting the partial region image requested to the client; and

15      an image partial access processing means for extracting the corresponding offset & partial access information, accessing the corresponding image file stored in the first storage means and generating the partial region image based on the extracted offset & partial region access information, and transmitting the generated partial region image to the first communication processing means, in accordance with the request of a partial region image file from the first communication processing means.

20      2. The apparatus of claim 1, wherein the client includes:

25      a scroll control means for interpreting scroll information inputted by a user, and ordering and controlling a new region to display;

a display control means for requesting partial region image to display the new region and controlling the partial image of the new region to display, under the control of the scroll control means;

5 a second communication processing means for transmitting the request for partial region image file from the display control means to the first communication processing means and receiving the partial region image from the first communication processing means; and

10 a decoding means for decoding the partial region image transmitted from the second communication processing means and sending it to the display control means.

15 3. The apparatus of claims 2, wherein the partial region image is substantially a partial image of a high-resolution and high-volume JPEG (Joint Photographic Experts Group) image data.

20 4. The apparatus of claims 1, wherein the partial region image is substantially a partial image of a high-resolution and high-volume JPEG (Joint Photographic Experts Group) image data.

25 5. The apparatus of claim 4, wherein the DRI (Define Restart Interval) of present JPEGs are modified to be 1 so that each MCU can be decoded independently and data can be brought in order to access and transmit the necessary part of

a JPEG, and the offset table and information for JPEG partial access are generated during the DRI modification procedure, when an image data is converted to a partial region accessible image file.

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6. A method for partially transmitting image data on a network, the method comprising the steps of:

a) when a server registers an image in its DB, converging the image file to a partial-region-accessible file and storing it and generating information needed for generating partial-region image, which is offset & partial region access information;

b) when a client requests partial region image, the server accesses the corresponding image file, which is stored, based on the offset & partial region access information; and

c) transmitting the generated partial region image to the client.

7. The method as recited in claim 6, wherein the partial region image is substantially a high-resolution and high-volume JPEG (Joint Photographic Experts Group) image data.

8. The method as recited in claim 7, wherein the DRI (Define Restart Interval) of present JPEGs is modified to be 1 so that each MCU can be decoded independently and data can be brought in order to access and transmit the necessary part of a JPEG, and the offset table and information for JPEG partial

access are generated during the DRI modification procedure, when an image data is converted to a partial region accessible image file.

5        9. The method as recited in claim 6, wherein the step a) includes the steps of:

d) preparing a conversion file and memory, opening an input JPEG file, generating a converted JPEG that supports partial access and output JPEG files, and assigning memory for offset information;

e) decoding the input JPEG file to the scan header, copying and recording it in the output file, the target file, and storing its offset location information to the scan header in the offset information;

f) modifying and processing the DRI (Define Restart Interval) of the target file; and

g) decoding and processing the MCU (Multipoint Control Unit.

20        10. The method as recited in claim 7, wherein the step a) includes the steps of:

d) preparing a conversion file and memory, opening an input JPEG file, generating a converted JPEG that supports partial access and output JPEG files, and assigning memory for offset information;

e) decoding the input JPEG file to the scan header, copying and recording it in the output file, the target file,

and storing its offset location information to the scan header in the offset information;

f) modifying and processing the DRI (Define Restart Interval) of the target file; and

5 g) decoding and processing the MCU (Multipoint Control Unit.

10 11. The method as recited in claim 9, wherein, in the step f), it is determined whether the input JPEG is defined as the DRI could or could not be defined in the input JPEG, and if the DRI is defined the DRI already copied in the target file is modified to be 1, and if it is not defined a DRI marker segment is generated and inserted in front of the scan header of the target file and the offset location information to the scan header is modified.

15 12. The method as recited in claim 11, wherein, in the step g), component processing is conducted N-times, N being the number of components in the scan and RST marker insertion, in which the RST marker is inserted into the target file by calculating the numeral order of the RST marker, is carried out.

20 25 13. The method as recited in claim 12, wherein the procedure of the component processing includes the steps of:

h) preparing component information and DC and AC buffers;  
i) preparing DC and AC Huffman tables corresponding to

the numeral order of Huffman table and the standard Huffman table for encoding the DC; and

J) for N number of blocks, decoding the DC and calculating the DIFF, calculating D of the original DC value by adding the DC to the previous DC, by encoding the obtained DC value by using the standard table and updating it to DC buffer, decoding the AC coefficient and copying the data part of the AC coefficient obtained by the decoding procedure, copying the DC buffer to the target file first and then copying the AC buffer.

14. The method as recited in claim 13, wherein, in the procedure of substitute-encoding the original DC value of the step j), if J=1 the D of the original DC coefficient is encoded by using the standard table, otherwise, the decoded DC and DIFF are encoded by using the standard table and the newly encoded DC is updated to the DC buffer.

15. The method as recited in claim 6, wherein the step b) includes the steps of:

d) if the message of display region partial request is sent from the client to the server, the information for the offset & partial access information database being loaded to a JPEG partial access processor of the server;

e) checking if the requested region is a valid region, accessible from the original image, if it is, calculating the MBR (Minimum Boundary Rectangle) including the region; and

f) generating the requested region JPEG file, copying it up to the scan header, modifying X and Y of its frame header to the width and height of the MBR obtained in the step e), bringing MCUs (Multipoint Control Unit) corresponding to the MBR one by one and recoding them in the generated file and inserting the RST marker thereto, and recoding an EOI (End of Image) marker.

16. The method as recited in claim 7, wherein the step b) includes the steps of:

d) if the message of display region partial request is sent from the client to the server, the information for the offset & partial access information database being loaded to a JPEG partial access processor of the server;

e) checking if the requested region is a valid region, accessible from the original image, if it is, calculating the MBR (Minimum Boundary Rectangle) including the region; and

f) generating the requested region JPEG file, copying it up to the scan header, modifying X and Y of its frame header to the width and height of the MBR obtained in the step e), bringing MCUs (Multipoint Control Unit) corresponding to the MBR one by one and recoding them in the generated file and inserting the RST marker thereto, and recoding an EOI (End of Image) marker.

17. The method as recited in claim 6, wherein the server modify the DRI (Define Restart Interval) of present JPEGs to

be 1 so that each MCU can be decoded independently and data can be brought in order to access and transmit the necessary part of a JPEG, generating the offset table and information for JPEG partial access during the DRI modification procedure, 5 and when part of data needed for display is requested from the client, the server brings the necessary data from the converted JPEG by using information needed for the offset table and partial access, adds JPEG headers and information fit for the data and sends them to the client in a complete JPEG format.

18. The method as recited in claim 7, wherein the server modify the DRI (Define Restart Interval) of present JPEGs to be 1 so that each MCU can be decoded independently and data can be brought in order to access and transmit the necessary part of a JPEG, generating the offset table and information for JPEG partial access during the DRI modification procedure, and when part of data needed for display is requested from the client, the server brings the necessary data from the converted JPEG by using information needed for the offset table and partial access, adds JPEG headers and information fit for the data and sends them to the client in a complete JPEG format. 20

19. A computer-based recording medium for recording a program to embody the method transmitting partial image on a network, the functions of:

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- a) when registering an image in a server, converting and storing the image file to a partial-region-accessible file and storing, and generating information needed to generate partial region image in this procedure;
- 5 b) when requested for partial region image from a client, having a server access to the corresponding image file, which is stored in, based on the offset & partial access information and generating the partial region image; and
- c) transmitting the generated partial region image above to the client.